Approved for Release: 2016/07/28 C02955796

OCD

112

CLASSIFICATION SECRET

CENTRAL INTELLIGENCE AGENCY

REPORT NO. (b)(3)

INFORMATION REPORT

CD NO.

COUNTRY Germany (Russian Zone)/USSR

DATE DISTR. 16 May 1949

SUBJECT Shipment of Heavy Water Units to Russia; German Heavy Water Research

NO. OF PAGES 2

PLACE ACQUIRED Germany, Karlsruhe

Return to CIA Library

NO. OF ENCLS. (LISTED BELOW)

DATE OF INFO. 1945 - end 1946

SUPPLEMENT TO REPORT NO.

(b)(1)
(b)(3)

THIS DOCUMENT CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF THE ESPIONAGE ACT 50 U.S.C., 31 AND 32, AS AMENDED. ITS TRANSMISSION OR THE REVELATION OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW. REPRODUCTION OF THIS FORM IS PROHIBITED.

THIS IS UNEVALUATED INFORMATION

SOURCE

1. Shipment of heavy water units from Germany to Russia.

a. Up to the end of 1946, a maximum of four heavy water units existed in Germany, and it is very probable that all were shipped to Russia; it is certain that three of them were shipped there. It is not known whether new heavy water units have been constructed in Leuna since the beginning of the Russian occupation, but this possibility is doubted.

b. The four units existing in Germany in 1946 were as follows:

1) A high-concentration unit which belonged to the Norsk-Hydro plant and which was brought by the Germans to the Baltic Sea coast. It is certain that this unit fell into Russian hands and was shipped to Russia.

2) A heavy water unit with which Dr. Geib worked until his departure for Russia on 22 October 1946. This unit was shipped to Russia at about the same time. It was a pilot plant not destined for production, but for research and development along the lines of the Harteck-Suess hot-cold procedure. The principle of this small pilot plant is described in the secret research reports of the German Atomic Energy Commission (Uranverein) which fell into American hands, and also in the FIAT reports. While working with this pilot unit in 1945 and 1946, Geib had some difficulties which he seems to have overcome before he departed to Russia. (b)(1) in which he said "have I already mentioned (b)(3) you that the hot-cold pilot plant has been put up again? I suppose that it will function in a short time". In another letter of 1 January 1946 he wrote, "We have many technical difficulties with the hot-cold plant, mainly with the pumps. It now turns out that many things were planned carelessly by the engineers. But I hope that the things will eventually function."

3) Prior to October 1945, a small high-concentration pilot plant, constructed by Dr. Elbel in 1942, was shipped from Leuna to Russia. The plant consisted of an electrolytic cell of a few amperes and eight to

CLASSIFICATION SECRET

STATE		NAVY	X	NSRS		DISTRIBUTION							
ARMY	X	AIR	X	FBI		AEC							

EXPLOITED BY IR

Approved for Release: 2016/07/28 C02955796

Approved for Release: 2016/07/28 C02955796

ten exchangers (Austauschraüme) of about one liter volume each, in which the deuterium of the developed hydrogen was exchanged with that of the condensed water streaming in the opposite direction. During the war, it was planned to build a high-concentration production unit on this model but this plan has not been carried out.

4) In 1944, the Leuna heavy water specialists discussed a procedure of heavy water production by low pressure distillation of water. Preliminary experiments were carried out in 1944 in Bitterfeld, where wooden filter beds ("Füllkörper") for low pressure columns were tested. Very probably, this equipment fell into Russian hands and was shipped to Russia.

2. Heavy water research in Leuna.

At the end of the war, two heavy water production methods were widely discussed in Leuna, and it is highly probable that both methods have been developed since 1945.

a. The above mentioned low pressure distillation method for which only the preliminary tests had been carried out in Bitterfeld.

b. A procedure, invented by Geib, based on the interchange relation $H_2O + HDS \rightleftharpoons HDO + H_2S$. Dr. Orlicek, during the war one of the best heavy water technicians in Leuna, composed a paper on this method entitled "Die Anreicherung von Deuterium unter Benutzung des Gleichgewichts: $H_2O + HDS \rightleftharpoons HDO + H_2S$).

3. Nickel catalysts.

During the war, the contact plant of the Leuna works produced samples of nickel-impregnated catalysts which were tested by Suess for the purpose of finding working catalysts requiring a minimum of nickel, then very rare. One catalyst which required particularly little nickel was produced in larger quantities (about eight tons) for the Norsk-Hydro plant. The nickel-impregnated catalysts produced by the Germans during the war are of little importance at present, since they were produced with a view of economizing nickel, and therefore were poor and impractical.

Approved for Release: 2016/07/28 C02955796